

CLAIMS

1. A coating composition comprising:

(A) at least one polymer containing carboxyl group, having a weight-average molecular weight, calculated in terms of styrene, of 5,000 to 200,000, an acid value KOH of 10 to 200 mg/g, and a glass transition temperature of 50 to 250°C,

(B) a polyfunctional epoxide-group-containing compound having at least one benzene ring or 5-, 6-, or 7-membered heterocycle ring containing at least one heteroatom selected from nitrogen, oxygen or sulfur or cyclohexyl group or combinations thereof, and two or more epoxy groups, serving as a crosslinking agent,

(C) a reaction accelerator, and

(D) an organic solvent.

2. The coating composition according to claim 1, wherein the (A) polymer is a copolymer of an acrylic or methacrylic ester and an aromatic vinyl compound.

3. The coating composition according to claim 1 wherein the amount of (A) polymer is from about 5 to about 30% by weight of the coating composition.

4. The coating composition according to claim 1 wherein the amount of (A) polymer is from about 10 to about 25% by weight of the coating composition.

5. The coating composition according to claim 1, wherein (B) the epoxide-group-containing compound has three or more epoxide groups.

6. The coating composition according to claim 1, wherein (B) the epoxide-group-containing compound is selected from the group consisting of bisphenol acetone diglycidyl ether, phenol novolak epoxy resins, cresol novolak epoxy resins, triglycidyl isocyanurate, tetraglycidyl diamine, tetraglycidyl-m-xylenediamine, tetraglycidyl-1,3-bis(aminoethyl)cyclohexane, 1,1,2,2-tetraphenylolthane tetraglycidyl ether, triphenylolthane triglycidyl ether, triphenylolmethane triglycidyl ether, bisphenol hexafluoro-acetodiglycidyl ether, 1,3-bis(1-(2,3-epoxypropoxy)-1-trifluoromethyl-2,2-

trifluoromethyl)benzene, 4,4-bis(2,3-epoxypropoxy)octafluorobiphenyl, triglycidyl-p-aminophenol, tetraglycidyl-m-xylenediamine, 2-(4-(2,3-epoxypropoxy)phenyl)-2-(4-(1,1-bis(4-(2,3-epoxypropoxy)phenyl)ethyl)phenyl)-propane, and 1,3-bis(4-(1-(4-(2,3-epoxypropoxy)phenyl)-1-(4-(1-(4-(2,3-epoxypropoxyphenyl)-1-methylethyl)phenyl)ethyl)phenoxy)-2-propanol.

7. The coating composition according to claim 1, wherein (B) the epoxide-group-containing compound is present in an amount of about 1 to about 50 parts by weight of the polymer.

8. The coating composition according to claim 1, wherein (B) the epoxide-group-containing compound is present in an amount of about 5 to about 30 parts by weight of the polymer.

9. The coating composition according to claim 1, wherein (C) the reaction accelerator is an isocyanate or amine compound.

10. The coating composition according to claim 1, wherein (C) the reaction accelerator is a blocked isocyanate, tertiary amine, or blocked amine compound.

11. The coating composition according to claim 1, wherein (D) the organic solvent is selected from the group consisting of propylene glycol methyl ether, propylene glycol ethyl ether, propylene glycol propyl ether, propylene glycol t-butyl ether, dipropylene glycol methyl ether, dipropylene glycol propyl ether, tripropylene glycol methyl ether, propylene glycol methyl ether acetate, dipropylene glycol methyl ether acetate, ethylene glycol ethyl ether, ethylene glycol methyl ether, ethylene glycol butyl ether, ethylene glycol isopropyl ether, ethylene glycol n-butyl ether, cellosolve acetate, methyl cellosolve acetate, ethyl cellosolve acetate, diethylene glycol methyl ether, diethylene glycol ethyl ether, diethylene glycol butyl ether, diethylene glycol dimethyl ether, diethylene glycol diethyl ether, diethylene glycol monoacetate, diethylene glycol monoethyl ether acetate, propylene glycol phenyl ether, propylene glycol ethyl ether acetate, triethylene glycol butyl ether, 3-methyl-3-methoxybutyl acetate, 3-methyl-3-methoxybutanol, ethyl lactate, methyl lactate, butyl lactate

pentyl lactate, butyl acetate, amyl formate, isoamyl acetate, isobutyl acetate, methoxybutyl acetate, butyl propionate, isobutyl butyrate, butyl butyrate, ethyl pyruvate, γ -butyrolactone, and mixtures thereof.

5 12. The coating composition according to claim 1, wherein
(D) the organic solvent is propylene glycol methyl ether acetate, or a mixture of propylene glycol methyl ether acetate and other organic solvents.

10 13. The coating composition according to claim 1, wherein
(D) the organic solvent is a mixture of propylene glycol methyl ether acetate and an organic solvent other than propylene glycol methyl ether acetate, selected from the group consisting of propylene glycol methyl ether, propylene glycol ethyl ether, propylene glycol propyl ether, propylene glycol t-butyl ether,
15 dipropylene glycol methyl ether, dipropylene glycol propyl ether, tripropylene glycol methyl ether, propylene glycol methyl ether acetate, dipropylene glycol methyl ether acetate, ethylene glycol ethyl ether, ethylene glycol methyl ether, ethylene glycol butyl ether, ethylene glycol isopropyl ether, ethylene glycol n-butyl ether, cellosolve acetate, methyl cellosolve acetate, ethyl cellosolve acetate, diethylene glycol methyl ether, diethylene glycol ethyl ether, diethylene glycol butyl ether, diethylene glycol dimethyl ether, diethylene glycol diethyl ether, diethylene glycol monoacetate, diethylene glycol
20 monoethyl ether acetate, propylene glycol phenyl ether, propylene glycol ethyl ether acetate, triethylene glycol butyl ether, 3-methyl-3-methoxybutyl acetate, 3-methyl-3-methoxybutanol, ethyl lactate, methyl lactate, butyl lactate pentyl lactate, butyl acetate, amyl formate, isoamyl acetate, isobutyl acetate, methoxybutyl acetate, butyl propionate, isobutyl butyrate, butyl butyrate, ethyl pyruvate, γ -butyrolactone, and mixtures thereof.
25 14. A color filter comprising a protective film that is made from the coating composition according to claim 1.

35 15. A process for producing a substrate comprising a protective film, comprising applying a coating composition

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according to claim 1 to a substrate to form thereon a protective film.

16. The process according to claim 15, wherein the substrate is a color filter.

5 17. A substrate comprising a protective film, which is produced by the process according to claim 15.

18. A process for forming a protective film on a substrate comprising applying to the substrate a sufficient amount of a coating composition according to claim 1.

10 19. The process according to claim 18, wherein the substrate is a color filter.